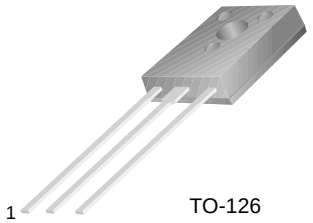
FAIRCHILD
SEMICONDUCTOR TM

# MJE180/181/182

**Low Power Audio Amplifier**
**Low Current High Speed Switching Applications**




TO-126
1. Emitter 2.Collector 3.Base

## NPN Epitaxial Silicon Transistor

### Absolute Maximum Ratings $T_C$=25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage : MJE180 | 60 | V |
| | : MJE181 | 80 | V |
| | : MJE182 | 100 | V |
| $V_{CEO}$ | Collector-Emitter Voltage : MJE180 | 40 | V |
| | : MJE181 | 60 | V |
| | : MJE182 | 80 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 7 | V |
| $I_C$ | Collector Current (DC) | 3 | A |
| $I_{CP}$ | Collector Current (Pulse) | 6 | A |
| $I_B$ | Base Current | 1 | A |
| $P_C$ | Collector Dissipation ($T_a$=25°C) | 1.5 | W |
| $P_C$ | Collector Dissipation ($T_C$=25°C) | 12.5 | W |
| $T_J$ | Junction Temperature | 150 | °C |
| $T_{STG}$ | Storage Temperature | - 65 ~ 150 | °C |

### Electrical Characteristics $T_C$=25°C unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Max. | Units |
|---|---|---|---|---|---|
| $BV_{CEO}$ | Collector -Emitter Breakdown Voltage | | | | |
| | : MJE180 | $I_C$ = 10mA, $I_B$ = 0 | 40 | | V |
| | : MJE181 | | 60 | | V |
| | : MJE182 | | 80 | | V |
| $I_{CBO}$ | Collector Cut-off Current : MJE180 | $V_{CB}$ = 60V, $I_B$ = 0 | | 0.1 | μA |
| | : MJE181 | $V_{CB}$ = 80V, $I_E$ = 0 | | 0.1 | μA |
| | : MJE182 | $V_{CB}$ = 100V, $I_E$ = 0 | | 0.1 | μA |
| | : MJE180 | $V_{CB}$ = 60V, $I_E$ = 0 @ $T_C$ = 150°C | | 0.1 | mA |
| | : MJE181 | $V_{CB}$ = 80V, $I_E$ = 0 @ $T_C$ = 150°C | | 0.1 | mA |
| | : MJE182 | $V_{CB}$ = 100V, $I_E$ = 0 @ $T_C$ = 150°C | | 0.1 | mA |
| $I_{EBO}$ | Emitter Cut-off Current | $V_{BE}$ = 7V, $I_C$ = 0 | | 0.1 | μA |
| $h_{FE}$ | DC Current Gain | $V_{CE}$ = 1V, $I_C$ = 100mA | 50 | 250 | |
| | | $V_{CE}$ = 1V, $I_C$ = 500mA | 30 | | |
| | | $V_{CE}$ = 1V, $I_C$ = 1.5A | 12 | | |
| $V_{CE}$(sat) | Collector-Emitter Saturation Voltage | $I_C$ = 500mA, $I_B$ = 50mA | | 0.3 | V |
| | | $I_C$ = 1.5A, $I_B$ = 150mA | | 0.9 | V |
| | | $I_C$ = 3A, $I_B$ = 600mA | | 1.7 | V |
| $V_{BE}$(sat) | Base-Emitter Saturation Voltage | $I_C$ = 1.5A, $I_B$ = 150mA | | 1.5 | V |
| | | $I_C$ = 3A, $I_B$ = 600mA | | 2.0 | V |
| $V_{BE}$(on) | Base-Emitter ON Voltage | $V_{CE}$ = 1V, $I_C$ = 500mA | | 1.2 | V |
| $f_T$ | Current Gain Bandwidth Product | $V_{CE}$ = 10V, $I_C$ = 100mA | 50 | | MHz |
| $C_{ob}$ | Output Capacitance | $V_{CB}$ = 10V, $I_E$ = 0, f = 0.1MHz | | 30 | pF |

# Typical Characteristics

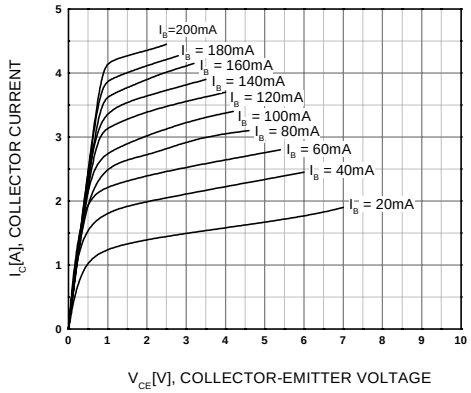



**Figure 1. Static Characteristic**

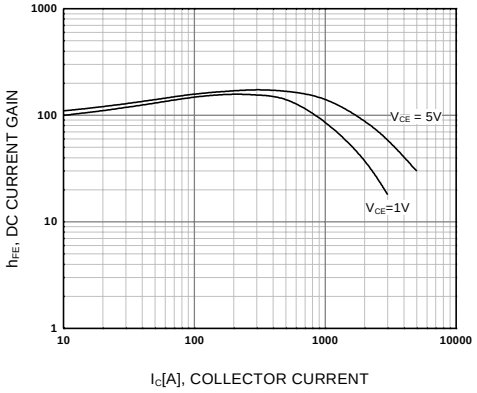



**Figure 2. DC current Gain**

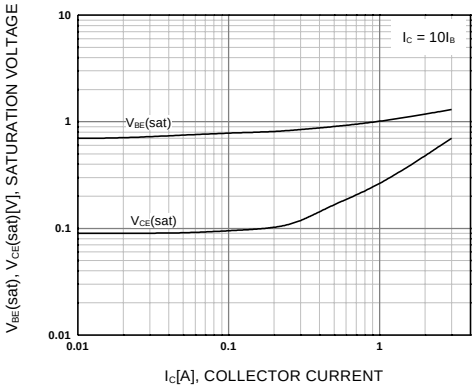



**Figure 3. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage**

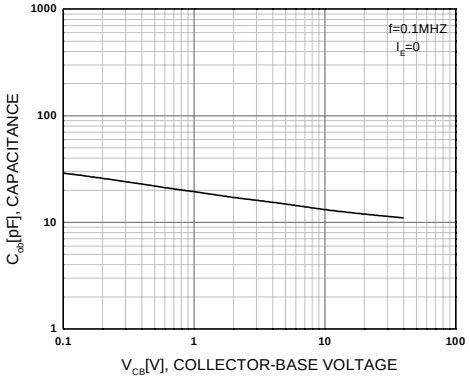



**Figure 4. Collector Output Capacitance**

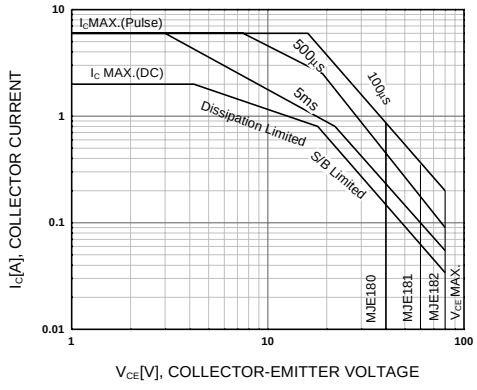



**Figure 5. Safe Operating Area**

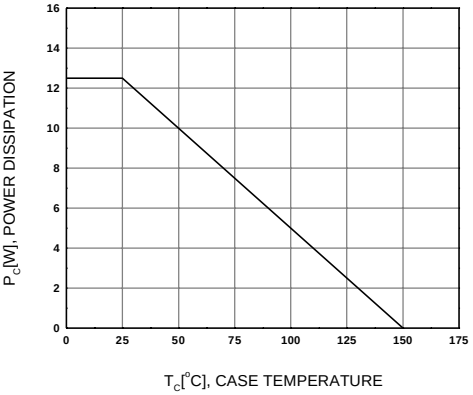
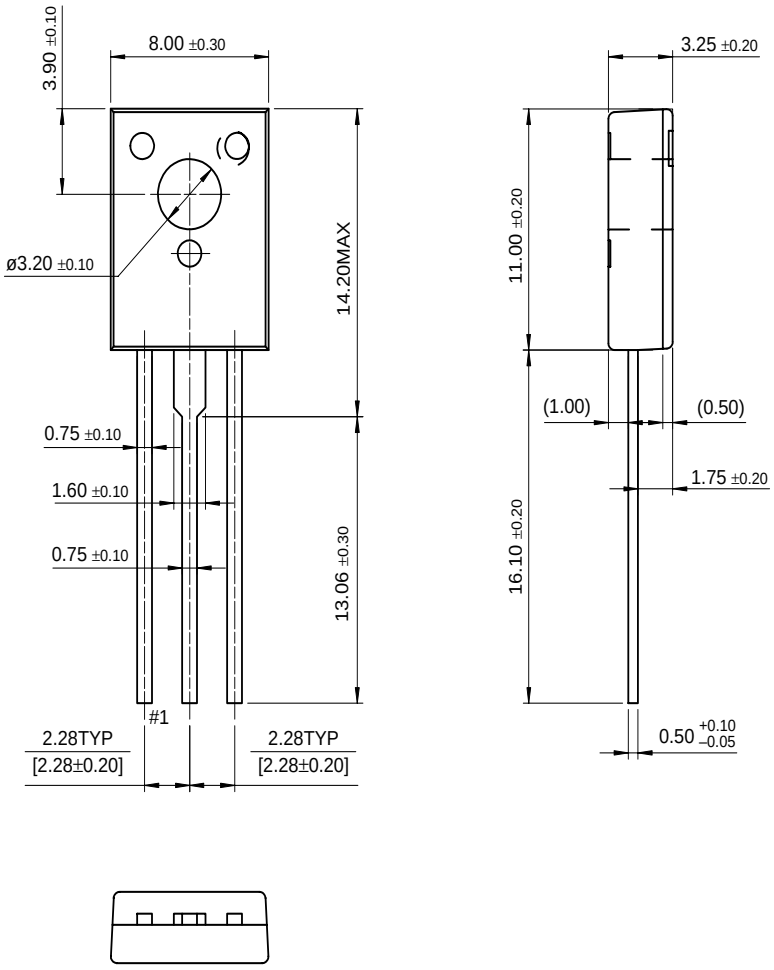



**Figure 6. Power Derating**

## Package Demensions

TO-126




Dimensions in Millimeters

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POP™
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QS™
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